

electron neutrino and muon neutrino cross section measurements with nuSTORM

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nuSTORM (neutrinos from STOREd Muons) is a future generation accelerator-based neutrino experiment that is currently in the planning stage. The aim of this project is to study neutrino-nucleus interactions and neutrino cross-sections with high precision, which is required for more precise oscillation measurements at long baseline experiments. Uniquely, it can make high-statistical measurements of electron-neutrino and antineutrinos cross-sections in the GeV energy range. It also provides an opportunity to explore BSM (Beyond Standard Model) physics such as lepton flavour violation, neutrino trident, large extra dimensions. In addition, nuSTORM can serve as a test bench for future muon colliders. In nuSTORM, neutrinos are produced by the decay of muons stored in a production ring rather than by hadron decay, which greatly reduces hadronic uncertainties in the flux. The production ring is able to store muons with varied central momentum in the range of about 1-6 GeV/c, producing well-defined neutrino fluxes and it will be the first of its kind. Cross-section evaluation for the latest set of nuSTORM fluxes on Ar has been done with GiBUU, a state-of-the-art event generator. The cross-section evaluated will be shown.

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